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ABSTRACT

The findings of a recent Economic Policy Institute report that asserts that U.S. schools are financially undernourished compared to other nations is critiqued in this paper. The argument is made that not only is there no systematic relationship between increased spending on education and academic performance, but also that increased spending is likely to cause economic decline. Spending more on obsolete, inefficient schools and colleges will waste resources and weaken the U.S. economy. Recommendations are made for the financing of restructuring, which include changes in resource allocation and investment in new technologies. To double educational productivity of U.S. investments in education and training by the year 2001, the suggestion is made that a minimum of 1 percent of educational institutional gross budgets be devoted to technological innovation (e.g., research, development, and technology). (39 references) (LMI)

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Hudson Institute Briefing Paper

May 1990 No. 120

THE "ACANEMIA" DECEPTION

How the Myth that America "Lags" in Education Spending Threatens to Undermine National Competitiveness

by Lewis J. Perelman

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[SUMMARY: America's academic bureaucracy, abetted by a recent report from the Economic Policy Institute, is spreading the myth that U.S. schools are financially undernourished compared to those of other nations. The truth is just the opposite: U.S. spending on education is "unsurpassed" (as President Bush has said). The "lag" in U.S. education is not in spending but in productivity: American schools actually are "shortchanging" the nation by wasting some $100 billion a year through sprawling bureaucracy and outmoded technology. Increasing budgets for obsolete schools will waste resources and delay the educational restructuring needed to compete in the 21st century economy.]

Statistics, Mark Twain observed, can be more deceptive than lies, or even "damned lies." His judgment would not have been shaken by *Shortchanging Education*, a recent paper from the Economic Policy Institute which uses tortured statistics in an attempt to discredit President Bush's contention that the focus of education reform "must no longer be on resources; it must be on results"--the central conclusion of the "Education Summit" meeting last September that formed the basis for the national education goals jointly endorsed by the president and the governors this winter. To thwart the president's initiative, America's academic bureaucracy has used the erroneous EPI report to bolster that lobby's habitual argument that spending, not achievement, is the essential measure of educational progress.

The Briefing Paper by EPI analysts Edith Rasell and Lawrence Mishel, published in January 1990 by the Washington-based think tank, claimed to show that the United States trailed 13 other "industrial" countries in spending on elementary and secondary (grades K-12) education, contradicting the Bush administration's assertion that U.S. education spending is "unsurpassed." In an

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explicit pitch to add at least $20 billion per year to U.S. K-12 spending, Rasell and Mishel concluded that, "Given the [inferior] level of investment in our pre-primary, primary, and secondary schools, it is not surprising that we are slipping behind in comparative measures of performance as well."

The truth about the current problems and needs of the American education system is mostly the opposite of what EPI claims and the academic lobby wants the public to believe:

- U.S. spending on education, as a whole and on K-12, is virtually "unsurpassed"; no major nation spends more per pupil--the only meaningful measure for such comparisons.

- This is not good news. Even if other nations **were** outspending the United States on schooling, this is a contest we should endeavor to lose--since the "winners" are racing toward bankruptcy.

- Poor **productivity**, not inadequate spending, is the central failure of national education and training systems--not only in the United States but in the rest of the world as well. The productivity of the economy's education sector trails far behind that of any other major industry, and is declining.

- **Technology** exists that can at least double the productivity of teaching; adequate investment to develop better teaching and learning technology could achieve even greater efficiency. Yet American schools and colleges invest virtually nothing in using or developing such technology. As a result, some $100 billion of U.S. education spending is lost annually to wasteful bureaucracy and archaic technology.

- Looking only at K-12 while ignoring higher education and other segments of the national learning enterprise--as EPI does--is a too-common error that paints a distorted picture of both the strengths and deficiencies of the American system and subverts our human capital policies.

- Beyond academic goals, the nation needs a concrete strategy for restructuring its learning enterprise, aimed at enabling more people to achieve more learning at less cost.

A technological transformation of teaching and learning is now both possible and essential for any nation that aspires to leadership in the 21st century's "economy of mind." Such a technological revolution can occur only as part of a comprehensive restructuring of the organization, management, staff, and practices of national education and training systems.

More spending on "more of the same" education will only distract effort from the structural changes needed to achieve more learning at less cost--restructuring education does not require bigger budgets but different budget priorities. In the absence of such fundamental redirection, spending more on obsolete, inefficient schools and colleges will waste resources a debtor nation can ill afford to squander, weakening the U.S. economy and undermining the nation's global competitiveness.

Altogether, America probably has the best education and training system in the world. The central problem is not that one country's

schools are better than another's, but that traditional academic systems--in other nations as well as the United States--are woefully inadequate to meet the challenges of a knowledge-age economy.

America is not shortchanging education. Education is shortchanging America.

WHY EPI IS WRONG

Although the EPI paper was immediately shown to be erroneous and deceptive by other analysts,[1] its faulty findings nevertheless have been widely reported as "fact" by the press, and are being continually repeated by academic lobby PR. Because the EPI report has been used so effectively by the academic bureaucracy to perpetuate the myth that U.S. education is underfunded--and because this "spend-more" campaign threatens once again to stymie the fundamental changes needed in the nation's education systems--the EPI study's errors urgently need public exposure.

The explicit objective of the Rasell and Mishel paper is to discredit the contention of the Bush administration and many of the nation's governors and business leaders that America's comparative weakness in educational achievement cannot be attributed to a lack of investment, since the United States spends more on educating its students than just about any other country on earth. Yet the EPI analysis fails to disprove what is, in fact, the truth.

As Exhibit 1 shows, in the most accurate assessment of pre-K through secondary education expenditures per student among industrial (OECD) nations, the United States ranks near the top of the list, second only to Switzerland.[2] And Switzerland, a nation about the size of New Jersey, is hardly a relevant model for the United States.[3] Adding more countries would still leave America near the top. By any practical standard, U.S. spending on its students is "unsurpassed."

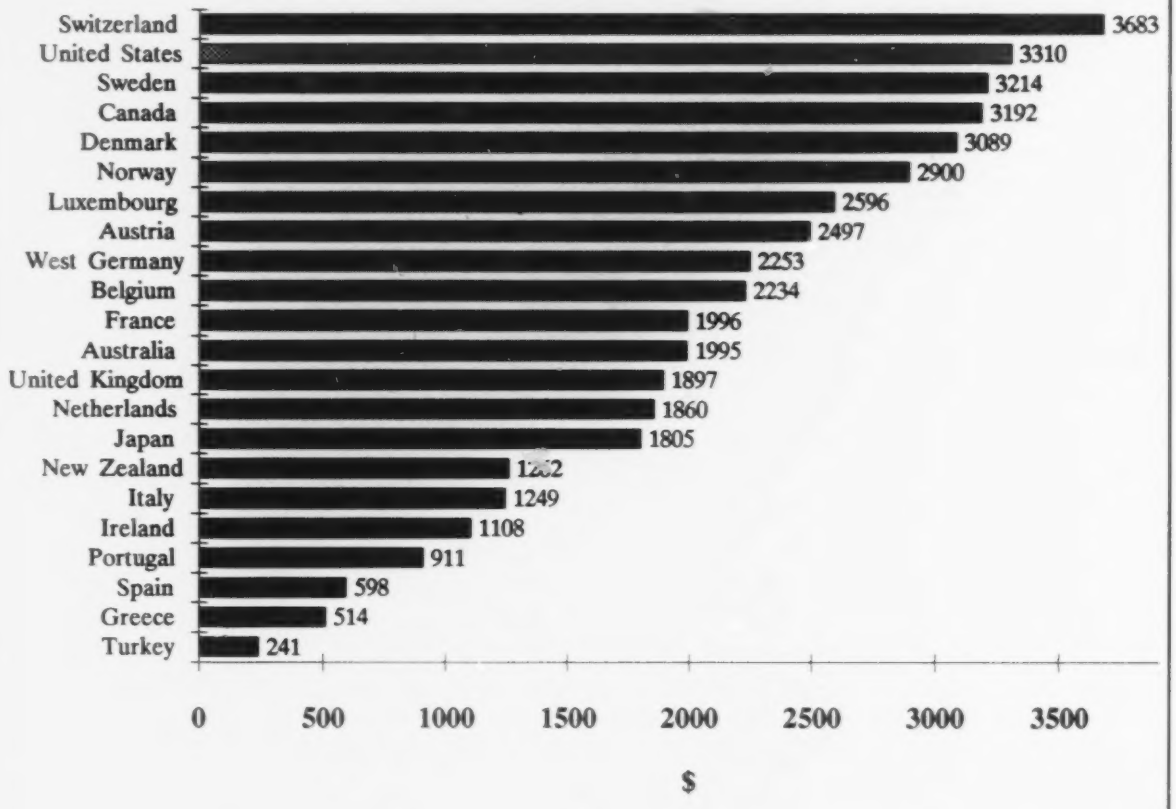
Erroneous measures. EPI's Rasell and Mishel have attempted to obscure this reality--with all too great success--by deflecting attention to the meaningless comparison of

Exhibit 1
INSTRUCTIONAL EXPENDITURES PER STUDENT*
(Pre-K through Grade 12)

Switzerland	$3,683	1985
United States	**3,310**	**1985**
Sweden	3,214	1985
Canada	3,192	1985
Denmark	3,089	1986
Norway	2,900	1985
Luxembourg	2,596	1983
Austria	2,497	1985
West Germany	2,253	1985
Belgium	2,234	1985
France	1,996	1984
Australia	1,995	1985
United Kingdom	1,897	1984
Netherlands	1,860	1984
Japan	1,805	1985
New Zealand	1,262	1985
Italy	1,249	1983
Ireland	1,108	1984
Portugal	911	1985
Spain	598	1979
Greece	514	1984
Turkey	241	1985

*Based on OECD 1985 Purchasing Power Parities (PPP) Index.
Source: U.S. Department of Education

Exhibit 1a
INSTRUCTIONAL EXPENDITURES PER STUDENT*
(Pre-K Through Grade 12)



*Based on OECD 1985 Purchasing Power Parities (PPP) Index. *Source:* U.S. Department of Education

national education expenditures as a share of gross domestic product (that is, national income), as shown in Exhibit 2.

Since even these data have the U.S. ranked near the top (second) when total national education spending is included, Rasell and Mishel insist on not counting the sizable U.S. investment in higher education, and then use further statistical "adjustments," in order to make America's apparent ranking fall close to the bottom of the 16 nations EPI chose to study. This is the main statistical concoction that underpins EPI's proclamation that "U.S. Spending on Education Lags Behind that of Most Other Industrial Nations."[4]

But spending on education as a share of national GDP has no meaning as a measure of either the magnitude or the value of investments in education. As the Education Department points out, by this spurious standard Mississippi presumably has a greater commitment to educational invest-

Exhibit 2
EPI COMPARISON OF EDUCATION EXPENDITURES/GDP (1985)
Share and Rank

	(1) K-12 and Higher Education		(2) K-12 Only		(3) Adjusted* K-12	
United States	**6.8%**	**2**	**4.1%**	**12**	**4.1%**	**14**
Australia	5.5	12	3.7	15	3.9	15
Austria	5.8	11	4.7	7	5.9	2
Belgium	6.1	7	4.9	5	4.9	5
Canada	6.8	2	4.7	7	4.7	8
Denmark	6.0	8	4.5	10	4.8	6
France (84)	5.9	10	5.1	3	4.6	9
F. R. Germany	4.6	16	3.5	16	4.6	9
Ireland (84)	6.0	8	5.0	4	3.8	16
Italy (83)	4.8	15	4.1	12	4.2	13
Japan	6.5	5	4.8	6	4.8	6
Netherlands (84)	6.8	2	4.7	7	4.5	11
Norway	6.3	6	5.4	2	5.3	4
Sweden	7.6	1	6.3	1	7.0	1
Switzerland	5.1	14	4.2	11	5.8	3
United Kingdom	5.2	13	3.9	14	4.5	11
Non-U.S. Average	**5.8**		**4.5**		**4.6**	

*Adjusted for 1985 U.S. K-12 enrollment rate

Source: Economic Policy Institute

ment than does Minnesota: In 1986, Mississippi spent 3.9% of its gross state product on K-12 education, compared to a 3.7% share for Minnesota.

In contrast, the Education Department notes that Minnesota's investment in K-12 education is larger than Mississippi's when measured by the more valid statistical indicator of state investment, expenditure per pupil: In that year, Minnesota spent $4,180 per pupil against Mississippi's $2,350 per pupil. But the higher cost of living in Minnesota inflates this apparent difference in expenditures to some extent. In any case, the difference in school spending has little to do with the substantial difference in academic performance between the two states (see Exhibit 5 and discussion on page 11).

Meaningless effort. The crux of the failure of EPI's argument lies in Rasell and Mishel's assertion that the share of national income allocated to education (or anything else) is "a

measure of national effort," along with their tacit implication that such "national effort" is identical to national virtue. Both assumptions are false.

First, the share of income a nation, or a community, or even a person devotes to education or any other purpose is not a measure of comparative "effort" but mainly is just an indicator of individual circumstances, notably wealth. If such a statistic has any meaning, it is opposite to what Rasell and Mishel infer.

Spending more on obsolete, inefficient schools and colleges will weaken the U.S. economy and undermine the nation's competitiveness.

Thus, wealthy nations or individuals are likely to spend a smaller share of their income on "necessities" such as education, or food, or shelter than poor ones do--not because the rich view any of these things as less important but simply because they have more income for other, "discretionary" spending. A doctor friend of mine who lives in a million-dollar house spends a smaller portion of his income on housing than I do, living in my rented apartment. The difference stems not from any variation in our "commitment" to shelter but from our disparate financial circumstances.

As the Education Department staff note, Americans spend only about a tenth of their income on food, while the people of India spend roughly half of their income on feeding themselves. This patently does not mean--as EPI's way of estimating would imply--that Americans are hungrier than Indians, or that Indians are more "committed" to either agriculture or nutrition than are Americans. If anything, the truth is just the opposite.

Similarly, the fact that the United States spends a larger share of both its national income and its government appropriations on defense than does Japan or the Federal Republic of Germany reflects particular historical and geopolitical circumstances. This difference does not mean that Americans value health, or education, or art less than these other peoples do. Nor does it mean that the American culture is inherently more bellicose than that of Japan or Germany. Again, if anything, the truth is just the opposite.

For EPI's equation of spending-as-a-share-of-income with "measure of effort" to be valid, everything else among the parties being compared would have to be equal. But among nations all other things never are equal, nor should we hope them to be.

Measuring spending per pupil. Rasell and Mishel attempt to justify using their own misleading measure of education investment --instead of the obvious and common measure, spending per pupil--by arguing that the latter is unreliable, because its relative value varies with fluctuating currency exchange rates. But these currency changes are easily accounted for by using the Purchasing Power Parity (PPP) index which allows expenditures in different countries to be compared consistently. The Education Department used the PPP to adjust the data in Exhibit 1 for currency variations.

Instead, Rasell and Mishel manufacture their own measure of education expenditures per pupil **as a percent of per capita income**. But this is just a convoluted and misleading way of restating expenditures as a share of

income. In fact, the data in Exhibit 3 incorporate the EPI data of Exhibit 2 and share the same flaws and distortions.

Ignoring productivity. An even more important flaw in EPI's purported "measure of effort" than its failure to account for differences in wealth and culture is that it ignores crucial differences in the **productivity** of expenditures made for the same purpose, which depends in turn on the technology and organization available to serve that purpose.

Thus, in the above agricultural example, India puts more "effort" into feeding itself than does the United States in important part because India's agricultural production and distribution technology is far less efficient than America's technology--food in India is more expensive than food in the United States.

Exhibit 3
EPI COMPARISON OF K-12 EXPENDITURES PER STUDENT AS % OF PER CAPITA INCOME (1985)

		rank
United States	**20.8%**	**14**
Australia	19.5	15
Austria	29.7	2
Belgium	25.0	5
Canada	24.0	8
Denmark	24.5	6
France (84)	23.2	10
F.R. Germany	23.5	9
Ireland (84)	19.4	16
Italy (83)	21.1	13
Japan	24.1	7
Netherlands (84)	23.0	11
Norway	27.1	4
Sweden	35.3	1
Switzerland	29.6	3
United Kingdom (84)	22.8	12
Non-U.S. Average	**23.5**	

Source: Economic Policy Institute

This last failure is the one that particularly makes the popular acceptance of EPI's erroneous education "spending lag" not merely distracting but--to the extent it influences education policy--downright subversive to the nation's hopes for economic development and competitive leadership.

The central truths obscured by EPI's statistical smokescreen are that (1) better academic results do not require spending more on education, and (2) spending more on education is at least as likely to cause economic decline as to reverse it.

Even among U.S. states, it is evident that gross spending on education does not predict academic achievement. South Dakota, for instance, ranks near the bottom (43rd) among states on spending per student, and dead last in average teacher salary. Yet the state's student test scores rank in the top five.[3]

It is true that, in international comparisons of standardized tests, U.S. students score lower than those in several of the "industrial" countries that Rasell and Mishel list that--by EPI's calculation--seem to spend more on K-12 education. But Rasell and Mishel actually selected countries for their list that supported their case for more education spending and left out countries that would disprove their argument.

Notably, EPI excluded from its table newly industrialized or industrializing countries such as Korea or Spain that spend less on educa-

Exhibit 4
EDUCATIONAL SPENDING/GDP AND ACHIEVEMENT COMPARED TO U.S.

	Total K-12* Spending (percent)	Adjusted K-12* Spending (percent)	Mathematics IAEP**	Science IAEP**
South Korea	4.0	3.1	+ 93.9	+ 71.4
Spain	2.7	2.6	+ 37.8	+ 25.4
United Kingdom	3.9	4.5	+ 36.0	+ 41.0
Ireland	5.0	3.8	+ 30.4	- 9.2
United States	4.1	4.1	(473.9)	(478.5)

*Total and "Adjusted" K-12 spending is from EPI data for U.K., Ireland, U.S.; Total K-12 data for S. Korea and Spain are from same source EPI uses; "Adjusted" K-12 spending for S. Korea and Spain is computed using EPI's method. Spending data are for 1985.

**International Assessment of Educational Progress (1988) measured mathematics and science proficiency of 13-year-old children in five countries and five Canadian provinces (not shown here). Scores range on a scale from 300 to 700. This table shows difference between scores for other nations and those for the United States (in parentheses).

Sources: UNESCO Statistical Yearbook 1988; A.E. Lapointe, N.A. Mead, and G.W. Phillips, *A World of Differences: An International Assessment of Mathematics and Science,* Report No. 19-CAEP-01 (Princeton, NJ: Educational Testing Service, 1989).

tion than either the United States or other "industrial" countries but whose students score higher on international tests, as shown in Exhibit 4.

Extravagant expenditures on education may be not only irrelevant to academic achievement but may be actually harmful to economic health. Rasell and Mishel urge the United States to add tens of billions of dollars to its already lavish education bill to catch up with the other "industrial" nations they claim lead us. But the "winner" in EPI's "school wars" spending race is Sweden, whose economic malaise recently precipitated the fall of its socialist government.

Undoubtedly, if U.S. taxpayers choose to increase the 36% of their income going to taxes to Sweden's more "advanced" 50% of income going to taxes, this country can eliminate its "lag" in education spending, and catch up to Sweden on the road to economic decay. The same UNESCO data EPI used show that Bulgaria--another country EPI omitted from its analysis--spent the same generous share of its national income on education as Sweden...until Bulgaria's Communist regime collapsed.

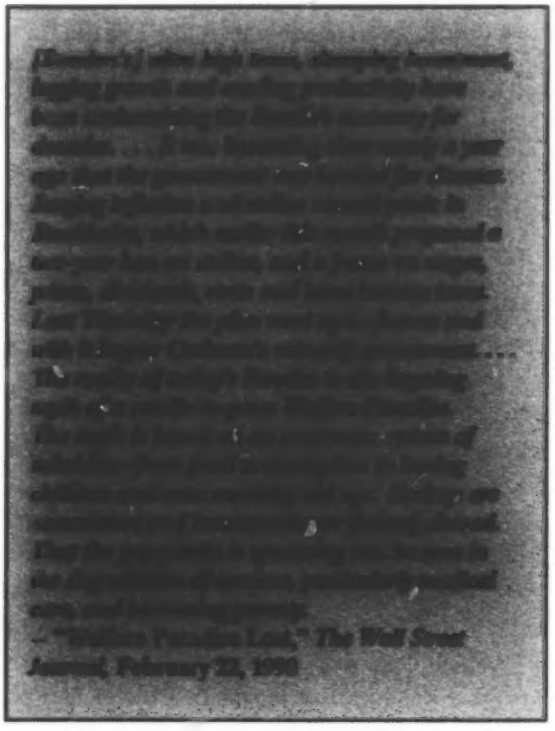
Ideological bias. EPI's central "findings" result not from objective analysis but from ideological preconceptions. Some of the EPI paper's celebrated conclusions have no connection with the data the paper presented.

For instance, Rasell asserts that "Because the United States is a huge continental nation with a decentralized school system...we could expect education expenses to be higher than

in a smaller, more homogeneous nation."[6] If centralized, national systems were inherently more efficient than decentralized ones, as Rasell assumes, Eastern Europe should be an economic powerhouse instead of the basket case it is.

Rasell's faith in the efficiency of centralization runs counter to current management theory and vast practical experience, in education as well as in the economy as a whole. Peter Drucker has argued that the lack of a national education ministry, and the decentralized, open, and flexible structure of U.S. education are among America's greatest competitive advantages in the world economy.[7]

There is somewhat more to be said for Rasell's argument that because the United States has more immigrants and more children in poverty than some other nations, "we



have to invest more money in compensatory education...just to achieve the same level of performance."[8] The primary flaw in this argument--typical of the entire EPI paper--is that it confuses spending with results.

If some children in America need special educational services to compensate for disadvantages and to avail those children an equal opportunity for learning and growth, those services certainly should be provided. But Rasell presents no evidence, and there is no reason to casually assume, that compensatory educational services necessarily must be more costly than other educational services.

And to the extent that compensatory education may prove more expensive than average, services to the disadvantaged will be more effectively financed by reallocating resources from wasteful or less urgent educational uses than by simply increasing expenditures. In fact, no studies have shown any sustained benefit from the billions of dollars spent on the major national program for compensatory education, Chapter I of the federal Elementary and Secondary Education Act.[9] And research recently reported by Stanley Pogrow of the University of Arizona concluded that money spent on Chapter I programs actually has the effect of inhibiting at-risk children's ability to learn.[10]

There is no reason to assume--and substantial evidence to doubt--that spending more on education will help the disadvantaged. Actually, many of America's poorest, most disadvantaged, and least academically proficient students reside in school districts whose spending per pupil is well above average. The District of Columbia, for example, spent over $5,700 on each public school student in 1987 --much more than the national average of

roughly $4,000, and more even than its neighbors in Maryland ($4,400) and Virginia ($3,800). Nevertheless, DC's students lead in dropouts and trail in test scores and other measures of academic performance.[11]

Much of the extra spending on "education" in places like Washington and New York simply adds to bloated school bureaucracies[12]--or is siphoned off by outright corruption--rather than nurturing the minds and talents of needy children.

THE REAL PROBLEM: PRODUCTIVITY

The critical education problem facing the United States and other nations is that education costs too much and delivers too little of the kinds of learning needed by the modern economy. The attempt to solve education's productivity problem by buying even more of the same academic education is like trying to cure alcoholism by subsidizing the price of bourbon.

The central fact EPI obscures is that the cost of educating American students has been growing steadily and extravagantly. Since the 1950s U.S. real spending (constant dollars) for each K-12 pupil has quadrupled. (Even EPI's unorthodox calculations show real spending growth since 1949 of over 71%.[13])

The United States today is spending over $40 billion more each year on K-12 education than it was at the beginning of the 1980s. Over the last decade, K-12 spending grew nearly 30% after adjusting for inflation.

Public education's critics charge that the quality of education has deteriorated over the last generation or two. Even supporters who claim the schools are improved are hard-pressed to argue that academic progress has been at all comparable to the vast growth in cost.

It's true, for instance, that American schools serve a broader population than they did a half-century ago: In 1940, only one out of five U.S. students graduated high school, while around three-fourths do today. But in the urban ghettoes where America's most disadvantaged students are concentrated, the high-school graduation rate is only about 50%.

The central truths are (1) better academic results do not require spending more on education and (2) more spending is likely to cause economic decline --not reverse it.

And the value of public education, both academically and economically, is clearly less than it once was. For instance, about 25% of American high school graduates exhibit no more than an eighth-grade level of literacy--they have high school diplomas but lack high school knowledge.

Moreover, a key lesson from Hudson Institute's Workforce 2000 study[14] is that the majority of U.S. high school **graduates** today are less prepared for work (and maybe even for life) than most school **dropouts** in our parents' day--because the world has changed much faster than the schools have. In particular, Hudson Institute's research found that the majority of new U.S. jobs in the 1990s and beyond will demand knowledge and skills exceeding those of even a proficient high school graduate. Increasingly, most workers will need substantial--and continuing--

postsecondary education and training simply to be employable.

This is a radical change from two or even one generation ago when a large number of intellectually unskilled but well-paid craft jobs in manufacturing, mining, and agriculture gave many school dropouts a good opportunity to labor their way into the middle class. Now, the Hudson Institute study finds that the fastest-disappearing jobs are those that require the lowest entry skills and the least continuing education. Even if schools were performing as well as they used to, the economic value of their traditional performance would be declining because of the shifting demands of a knowledge-age economy.

More spending means less productivity. An exhaustive review of two decades of educational research by Eric Hanushek of the University of Rochester yielded the "startlingly consistent" result that there is no systematic relationship between variations in school expenditures and variations in school performance. Moreover, as Exhibit 5 shows, Hanushek found little or no evidence of improved student learning resulting from the ways increased K-12 funding typically has been spent in pursuit of "excellence": smaller classes, higher teacher pay, more teacher training, bigger and better school buildings, and so forth.[15]

A study by Deborah Inman at New York University shows that while total state spending on K-12 education grew by about a third from 1983 to 1987, less than 2% of that sum was allocated to any kind of "reform."[16] Her study further indicated that the majority of these limited "reform" investments--which still totalled some $6 billion--went to the

Exhibit 5
IMPACT OF EDUCATION INPUTS ON STUDENT PERFORMANCE

	Number of Studies	% No Impact	% Positive Impact	% Negative Impact
Expenditures/pupil	65	**75.4**	20.0	4.6
Teacher/pupil ratio	152	**82.2**	9.2	8.6
Teacher education	113	**88.5**	7.0	4.5
Teacher experience	140	**64.4**	28.5	7.1
Teacher salary	69	**78.3**	15.9	5.8
Administrative inputs	61	**86.9**	11.5	1.6
Facilities	74	**83.8**	9.5	6.7

Source: Hanushek (1989); adapted from *The Washington Times*, 6 April 1989.

"more-of-the-same" kinds of measures Hanushek's research finds fruitless, rather than to any genuinely new, innovative, or more productive approach to meeting America's educational needs.

EPI's Rasell and Mishel call for increasing U.S. K-12 spending by at least $20 billion a year. Yet the $40 billion the United States added to its annual K-12 expenditures during the 1980s resulted in only minor academic improvement, as measured by the usual tests. And the Secretary of Education has lamented publicly that for the last three years or more educational progress has been almost nonexistent.

The spend-more policy EPI advocates--which mainly has been directed at the federal government--would not only fail to strengthen America's human capital but would make the country and its children poorer. The interest payment on the debt that will burden America's children for the remainder of their working lives is now a budget item nearly ten times the budget of the federal Education Department and is about equal to the total amount spent on K-12 education by federal, state, and local governments. For every dollar added to public spending for education "reform" in the 1980s, unrestrained government deficits swelled the U.S. public debt by roughly $100. The growing debt burden is making the next American generation poorer faster than more education spending plausibly could make it richer.[17]

The technology gap. At the heart of education's lethal spiral of poor and declining productivity lies not a shortage of spending by government but a gross lack of investment in technology and innovation by educational institutions. The roots of morbid inefficiency are revealed by a handful of the education industry's vital statistics (summarized in Exhibits 6 and 6a):

Exhibit 6
U.S. EDUCATION'S PRODUCTIVITY/TECHNOLOGY GAP

	EDUCATION	Average Business	High-Tech Business
Labor Cost / Output	93%	54%	46%
Capital Investment / Employee	$1,000	$50,000	$300,000
R&D Investment / Revenue	<0.1%	2%	7-20%
R&D Investment / Employee	<$50	$5,000	$30,000-50,000

Sources: Office of Technology Assessment; *Business Week.* See L. Perelman, "Closing Education's Technology Gap," Briefing Paper No. 111 (Indianapolis: Hudson Institute, November 1989)

- Education is tied as America's most labor-intensive industry, with labor costs representing 93% of output, compared with 54% for the average business and only 42% in the high-tech telecommunications industry.

- Education has the lowest level of capital investment (i.e., buying technology) of any major economic sector, providing only about $1,000 of capital for each worker, compared with an average of $50,000 of capital invested per job in the U.S. economy and investments of several hundred thousand dollars per employee in some high-technology businesses.

- The investment in research and development that is the wellspring of growth and competitiveness in every other business is almost nonexistent in the education sector. The average U.S. business spends 2% of its revenues on R&D; in many high-tech businesses investments of 7% to 20% or more of revenues in R&D are common. Yet the education industry invests less than 0.1% of its revenues in research and innovation. R&D investment per employee--a key factor of competitive advantage--is less than $50 a year in education, compared with $5,000 in a typical business and $20,000 to $40,000 or more in a high-tech business such as computer software.

But it's the productivity of students, not paid staff, that is really essential in the education business. When "worker" is equated with student rather than employee, education's already meager investment in research and technology charted above is at least ten times less: not even five dollars a year for research and only about a hundred dollars of capital investment per worker.[18]

To gauge the extent to which education has shortchanged innovation, consider that the Gillette Company's new, high-tech razor blade cost some $200 million in R&D investment over 13 years to create. Gillette, a company whose annual revenues of more than $3.5 billion are less than the education budgets of three-fourths of the U.S. states, thus spent more to invent a better shave than all the states combined spent during the same period to develop a better technology for teaching and learning than the 1,000-year-old "Yak in the Box" (the lecturing classroom professor).

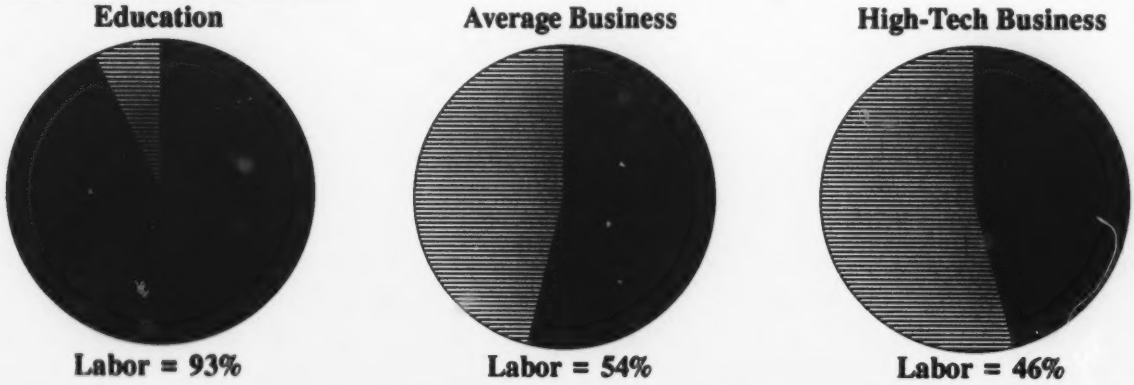
As a result of the prolonged, near-perfect resistance of academia to the research and innovation that fuel the advance of productivity, a yawning gap is growing between the technology of the school and the technology of the "real" world. Had educational technology advanced at the same pace as computer technology over the last half century, the high school diploma that still takes a dozen years at an average cost of $60,000 to complete could be "produced" in less than five minutes for less than a nickel. While human factors still limit such instant learning, the fact remains that schools and colleges are almost totally isolated from the information revolution that is so explosively transforming every other venue of human affairs.

The fault for this festering obsolescence lies not in any shortage of tax and tuition revenue, but is rooted entirely in the priorities of an academic establishment that has habitually replaced innovation with supplication.

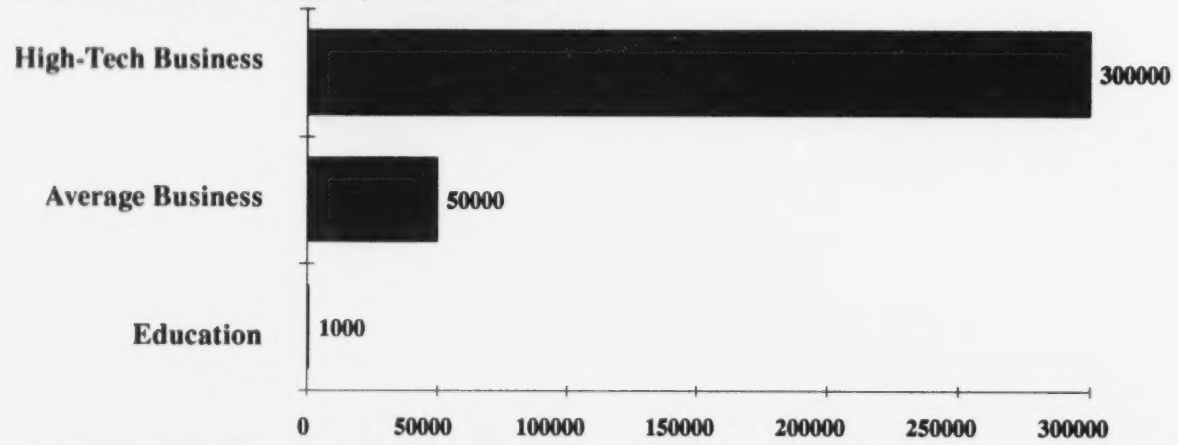
If there is good news in this dismal situation, it is that--quite to the contrary of EPI's message--the United States does not "lag" behind other nations in closing education's

Exhibit 6a
U.S. EDUCATION'S PRODUCTIVITY/TECHNOLOGY GAP

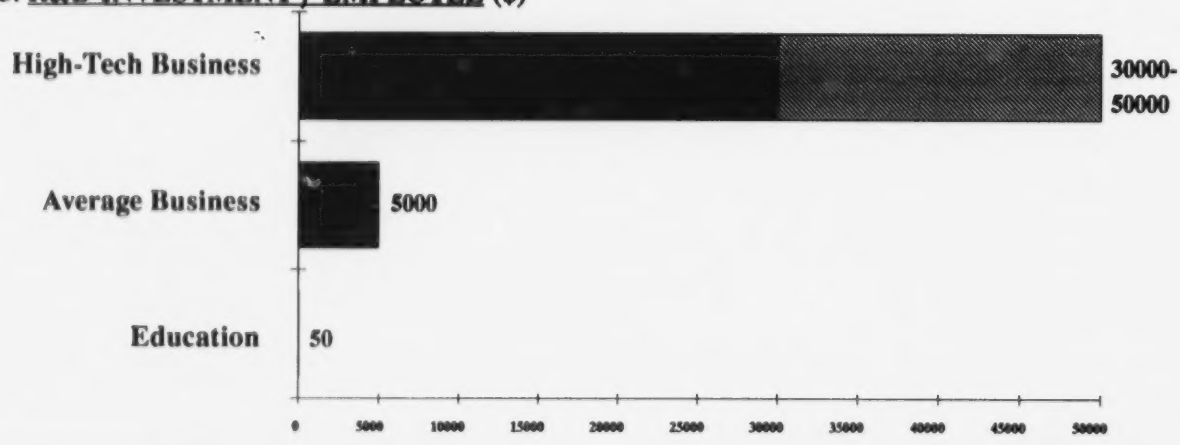
1. LABOR COST / OUTPUT



2. CAPITAL INVESTMENT / EMPLOYEE ($)



3. R&D INVESTMENT / EMPLOYEE ($)



disastrous technology gap. While specific data on national investments in educational R&D are scarce, the available information, shown in Exhibit 7, suggests that academia is as resistant to innovation and productivity in other nations as in the United States. So America is not yet losing the race to transform educational technology to match an information-age economy--but only because the other guys have not yet showed up.

THE SEGMENTATION FALLACY

Another critical flaw in EPI's analysis is its insistence on focusing exclusively on U.S. expenditures on the K-12 segment of education, to the exclusion of higher education and other "lifelong" learning investments. In fairness, EPI is not alone in this crucial error, which commonly subverts American thinking about education and training policy.

Because even Rasell and Mishel concede that total U.S. education spending is unexcelled, the whole presentation of EPI's analysis rests on their assertion that "the U.S. crisis is not in higher education but in K-12." But this claim is simply false.

The strengths and weaknesses of the American learning enterprise cannot meaningfully be isolated in any one segment of a diverse and highly integrated system that is unique in the world. Arbitrary segments such as pre-school, elementary, secondary, higher, vocational, adult, formal, and nonformal education or training bear only limited resemblance to the ecological reality of this complex enterprise. And such categories of the U.S. learning system are no more than partly comparable to their counterparts in other countries.

Exhibit 7
INVESTMENT IN EDUCATIONAL R&D
AS SHARE OF TOTAL NATIONAL EDUCATION SPENDING
(1986 - Local Currency)

Country*	Educational R&D Spending (x 000)	Total Educational Spending (x 000 000)	R&D/Education **(percent)**
F. R. Germany	174,280	86,326	0.202
Greece	78,340	('85) 142,315	0.055
Ireland	1,968	1,143	0.172
Italy	9,890,000	35,442,000	0.028
Netherlands	24,870	('85) 28,298	0.088
Portugal	3,800	181,029	0.002
United Kingdom	34,399	19,042	0.181

***These are the only EEC countries reporting "education" as a subset of R&D expenditures.**

Sources: EUROSTAT, *Government Financing of Research and Development 1980-1987* (Luxembourg, 1989); OECD, *Education in OECD Countries 1986-87* (Paris, 1989); total educational spending for Italy from UNESCO, *Statistical Yearbook 1988.*

"K-12" education outside schools. To cite one example of how this kind of segmentation error contaminates EPI's analysis: By ignoring the role of postsecondary institutions in providing "basic" education, EPI understates U.S. total investment in "elementary and secondary" education for **people**, as opposed to just kids.

The fact is that American postsecondary institutions (especially community colleges) provide extensive "compensatory" education (equivalent to K-12 curricula): 25% of U.S. college freshmen take "remedial" (i.e., high school or less) math courses, 21% take remedial writing courses, and 16% take remedial reading courses.[19] With about half of all U.S. high school graduates going on to some kind of college, it's clear that a substantial amount of American "secondary" education is being delivered in "postsecondary" institutions.

The fault for education's festering obsolescence lies not in any shortage of tax and tuition revenue, but is rooted entirely in the priorities of an academic establishment that has habitually replaced innovation with supplication.

A growing number of Americans are getting their basic (K-12) education neither in schools nor colleges, but in the workplace. A recent survey of 200 major U.S. corporations disclosed that 22% teach employees reading, 41% teach writing, and 31% teach computation. The American Society for Training and Development projects that 93% of the nation's biggest companies will be teaching their workers the "three R's" within the next three years.[20]

Immigrants. Rasell correctly notes that the much larger number of immigrants in the United States than in most other countries should have an important impact on the nation's education system. But EPI's narrow focus on K-12 spending misconstrues that impact.

U.S. immigrants are predominantly adults, not children: 61% of immigrants are age 16-44, compared to 48% of native Americans in that age range. More than two-thirds of all immigrants are older than the mandated "school age." At the same time, some 13% of adult immigrants older than 25 have less than a fifth-grade education, compared to only 3% of natives with that little schooling. And the vast majority of U.S. immigrants come from non-English-speaking countries.[21]

What all this means is that a large share of immigrants who need "basic" (K-12) education are adults, not children, who are most likely to be served in "postsecondary" or "adult" education programs.[22] Thus, again, a substantial portion of the U.S. investment in "elementary and secondary" education is not being credited in EPI's national "K-12" accounts.

Crossed segments. By excluding higher education expenditures from their calculations, the EPI analysts also omit one of the most costly forms of America's extravagant investment in K-12 education: namely, the large proportion of U.S. higher education resources allocated to generating the academic credentials the public school bureaucracy demands for the employment and promotion of teachers and administrators.

Such "Education" diplomas represent about 9% of all bachelor degrees, 25% of all

masters degrees, and 20% of all doctorate degrees awarded annually in the United States. If the cost of the "ed school" diploma mills were allocated to the nation's K-12 budget, EPI's putative K-12 spending "lag" would be wiped out.

On the other side of the ledger, the rapid growth of postsecondary options in American high schools means that more U.S. secondary education spending is actually going for higher education. Ten states now offer public school students the option of attending college or university classes. For instance, in Minnesota and Colorado, 11th and 12th grade students now are allowed to take courses in colleges, with public "K-12" monies being used to pay college tuition. In Maine, high school students taking postsecondary courses get credits that count toward **both** high school and college graduation.[23]

Similarly, thousands of American high school students now take advanced placement or "AP" examinations, administered by the College Board, which allow them to earn college credit for courses taken in high school. In 1987, eight states offered AP courses and examinations to 10% or more of their high school juniors and seniors. Nationwide, the number of high school students taking AP courses is growing rapidly: from 2.9% in 1981 to 6.5% in 1987.

The real shortchanging. If any segment of the U.S. learning enterprise is being "shortchanged" it is neither K-12 nor higher education, but adult education and training. The United States has more adult functional illiterates than kids in high school. About as many American adults need further basic education as there are children in U.S. public schools. Yet, for every dollar spent on K-12 education for children in the United States, less than a penny is spent on basic education programs for adults.

Studies by Anthony Carnevale of the American Society for Training and Development (ASTD) show that the United States is underinvesting in the continuous training and retraining needed to have a competitive workforce.[24] Carnevale's research reveals that most employer-provided training goes to the employees who are already most educated, while public training funds aid no more than the most disadvantaged 8% of the workforce --leaving the mass of workers in the middle with little support for upgrading their human capital. To help close this gap, a recent ASTD report recommended that U.S. employers expand their investment in employee education and training to at least 2% and preferably 4% of payroll, an increase of between $13 billion and $56 billion a year.[25]

These facts only begin to suggest how distorted may be the conclusions derived from international comparisons of only limited segments of national learning enterprises. The EPI paper notes, for example, that international tests of educational achievement stop with 14-year-olds. Rather than recognizing the bias and limited utility of such tests--the human mind does not stop growing after puberty--Rasell and Mishel simply choose to ignore both the cost and the value of the generous U.S. investment in postsecondary education, guaranteeing that their paper will shortchange America.

The great strength of the American system is that it provides second and third and more chances for success to those who have failed in or been failed by school. It's true that the bottom third of the U.S. school popula-

tion or adult workforce shows less academic proficiency (often grossly less) than the least accomplished group in a number of other nations. But much of this apparent deficiency stems from the racial and ethnic diversity of a nation of immigrants, which is also one of America's key competitive advantages.

And the United States offers opportunities for remediation, redemption, and further learning beyond youth that are largely nonexistent in many other countries with which American schools are invidiously compared. At the same time, entrepreneurship--a mere back alley in most other "industrial" economies--in America is a broad avenue for both personal advancement and economic development where academic credentials are irrelevant.

The seemingly superior commitment and performance of the K-12 education systems of other countries compared to the United States arise in no small part from the most viciously elitist and exclusionary aspects of those nations' postsecondary systems. In the Japanese school system for example, obsessive study is driven by a social caste system that hinges on college entrance exams. For Americans to envy this kind of feudal rite of passage is foolish. To emulate it would be folly.

THE PERILS OF OVEREDUCATION

EPI embraces the common but costly liberal assumption that if some education is a good thing, then more must be better. But it is becoming increasingly evident that too much investment in traditional, academic education may be a bad thing for both personal and socioeconomic development.

Miseducation. A U.S. Labor Department report, *Workplace Basics,* finds that there are six other groups of "basic skills" **besides the traditional "3 Rs"** that now are considered by American business to be essential for any kind of employment in the 1990s and beyond: (1) knowing how to learn; (2) listening and oral communication; (3) creative thinking and problem solving; (4) personal management; (5) group effectiveness; and (6) organizational effectiveness and leadership.[26]

Traditional forms of schooling, whether for children or adults, are not only irrelevant to cultivating this broad range of competencies needed by the modern knowledge worker, but may even be harmful. A U.S. National Research Council report by Lauren Resnick of the University of Pittsburgh argues that the skills of thinking and working encouraged by conventional schooling are almost exactly opposite to those required for most of today's and tomorrow's jobs--for instance: individual thinking in school versus shared thinking in the real world; pure thinking in school versus manipulating tools outside; symbolism in school versus practical reasoning on the job; and general principles in academe versus

situation-specific competencies in the workplace.[27]

Uncertain returns. In the United States of a generation ago, virtually any investment in more education offered an attractive rate of return--the cost of education was more than paid back by the greater incomes commanded by college graduates and those with advanced degrees. But the return on investment in generic education has become increasingly dubious for all concerned.

In the 1970s, the difference in lifetime income between U.S. high school graduates and college graduates became so narrow that some economists estimated that the return on investment in formal higher education might even be negative.[28] In the late 1980s, the gap between the incomes and employment rates of college and high school graduates widened dramatically, making higher education now appear to be not only an attractive but perhaps essential investment.

These gross measures of the value of postsecondary education in the American economy may be misleading, however. The growing division between the economic status of college and high school graduates has occurred not because the demand for more-educated workers has increased but because the employment opportunities traditionally available to individuals with no more than a high school education--mainly in manufacturing or agriculture--are rapidly vanishing.[29]

Overschooling. The apparent demand for "more educated" workers actually is a kind of inflation phenomenon. While the basic skill requirements for entry-level work have been generally increased by technological and organizational change, the U.S. economy's demand for highly-schooled "professional" workers is largely oversupplied. Because jobs requesting[30] no more than high school credentials are disappearing much faster than jobs asking for college degrees, it appears that the educational requirements of employment are increasing. But the numbers of jobs whose content genuinely requires college or postgraduate training are neither large enough nor growing rapidly enough to make up for the number of low-skilled jobs being structurally displaced.

An exhaustive review of two decades of educational research yielded the "startlingly consistent" result that there is no systematic relationship between variations in school expenditures and variations in school performance.

Workforce 2000 and other studies find that the most acute human capital need in the modern economy is for skilled technicians. As the latest analysis of international competition by Michael Porter of the Harvard Business School concludes: "[America particularly needs] a new national effort to upgrade technical and vocational schools.... What is required for competitive advantage is specialized skills tailored to particular industries."[31]

On the other hand, America has a surplus of over-schooled "professionals." Few would question that the United States has too many lawyers. During the 1980s, half the country's physicians in private practice didn't have enough work to fill their calendars; meanwhile, a glut of empty beds has been driving many hospitals into bankruptcy. The surplus of dentists has led some notable universities

such as Georgetown to shut down their dental schools.

American business schools continue to graduate 70,000 new MBAs a year at the same time that the nation's biggest companies are shedding thousands of management jobs as they "downsize" to become more efficient competitors. Harvard business school professor Robert Hayes argued in a recent article that there is no evidence that the growing amount of money spent on business schools (now $3 billion a year) has served America well during the last 25 years. As Lester Thurow, dean of MIT's Sloan School of Management, put it: "If our business schools are doing so well, why are our American companies doing so badly?"[32]

Excessive schooling not only wastes family and community resources, but actually may leave overschooled workers worse off in the job market: One recent study found that overeducated workers actually get paid less than undereducated workers to do the same job.[33]

As the U.S. economy faces, through the 1990s, a growing shortage of entry-level workers, and simultaneously a relative surplus of more-educated and more-experienced workers in many fields, the apparent economic benefit of further schooling beyond high school is likely once again to diminish.

At the heart of these dilemmas is the crucial--but often overlooked--difference between learning and schooling. The same technology of the knowledge-based economy that has made learning an ever more essential feature of working and living has made the process and culture of traditional schooling obsolescent. With the "specialized skills"

Porter mentions becoming obsolete every few years, the prerequisite skill for a growing majority of occupations is "learning-to-learn." This trend is fast blurring the conventional distinction between vocational training and liberal education.

While the espoused goals of the so-called "liberal arts tradition"--critical judgment, creativity, clarity, independence, responsibility, and sheer erudition--may be even more broadly desirable than ever, it is far from clear whether the structures and practices of academic institutions are the most effective means to achieve those goals. Certainly they are not the most efficient.

It's also important to recognize, as McLuhan observed, that the medium also is the message. That is, the scholastic environment convey many lessons, beyond the explicit curriculum, that are often counterproductive to both personal and community development. The social costs of academic credentialism have been too much ignored.

Whatever it has done for test scores, academic education following the European, "liberal arts" tradition also has served to reinforce feudal class structures and ethnic/national division in Europe and the Orient. In America, the same academic conceit has bred what the late Herman Kahn labelled a "New Class" of credentialed experts infected with "educated incapacity." The cultural bias of "liberal" academia against manual labor, commerce, and even capitalism has contributed to Europe's festering unemployment and to America's flagging industrial competitiveness.

And if academia has been a mixed blessing to human development in Europe and America, in the third world the disdain for work and productivity bred into the European-style schools inherited from colonial masters has been an economic and social catastrophe. In countries such as Zimbabwe and Sri Lanka, the overdose of academic education has bred a socially disruptive class of overeducated unemployed. Charting the same phenomenon in Indonesia, Nathan Keyfitz concluded: "To sell education to the public as a means to upward mobility ultimately risks disillusionment."[24]

The disillusionment in liberal academia as an engine of development now has come home to Europe. While some Americans view Europe's schools as objects of envy, European industrialists and government leaders increasingly view their traditional education systems as a barrier to the successful integration of what they call the European Economic "Space"--comprised of the Continent's suddenly expanding universe of democratic, market economies. Europe's leaders

are laying the groundwork to replace provincial, academic institutions with a new Continental system, blending basic, higher, professional, and vocational education, internationally integrated by a "telematic" network[35] linking the entire "space."

More spending on conventional schools, and more old-fashioned schooling per se will serve to weaken, not strengthen, the competitiveness of America or any other nation in the dynamic world of the 21st century. What every nation now needs is a new kind of learning enterprise--innovative in both form and content--to replace the outworn academic establishment.

TOWARD A COMPETITIVE LEARNING ENTERPRISE

EPI is scarcely alone in the belief that education is a key factor of global competitiveness. But analysts of competitive strategy from David Ricardo to Michael Porter and from Sun Tzu to Douglas MacArthur have known that the least promising path to competitive advantage is that of catch-up or copycat.

As James Fallows has argued persuasively, America can renew its tarnished leadership not by envy and emulation but only by building on its unique strengths.[36] In regard to education, this means not wasting further time and treasure trying to close mythical "lags" behind the academic budgets and test scores of other nations. Rather, competitive **leadership** means leapfrogging ahead of others, and being first to replace medieval academic structures with the high-tech learning industry an information-age economy demands.

The precedent for thus reinventing education can be found in America's own history. Despite the fact that the Industrial Revolution began in Great Britain, in the course of the 19th century the United States leapfrogged ahead of the British to seize the leadership of the industrial economy. Historians note that the key to America's competitive success in the industrial age was this country's unique education system which consciously did not attempt to emulate or catch up with the academic establishment of Britain, America's "mother country" and the world's then-leading industrial power. Instead, the pioneering Americans of the last century, through eclectic borrowing and novel designs, developed a completely new kind of education system focused on the practical, vocational needs of an industrial economy and a democratic society.

The perestroika gap. After World War I, the conventional wisdom of the world's navies was so convinced of the strategic preeminence of battleships that in the 1920s arms control negotiators desperately sought to avert a battleship-building "race." Once the resulting treaties failed, the world's naval powers each launched an equally urgent effort to avoid a national battleship "lag." Lost in all this rigmarole were the voices of the few visionaries like Mitchell in the United States and Yamamoto in Japan who could plainly see that airpower, not gunpower, had become the key to naval victory, and that the aircraft carrier had rendered the battleship obsolete.

Similarly, the "battleship" mentality that drives the more-spending-for-more-schooling lobby is leading America toward an intellectual and economic "Pearl Harbor." For the true threat to American competitiveness

today is not a schooling lag but a ***perestroika* gap** that is widening with breathtaking speed.

While "restructuring" in America remains little more than a hollow platitude, in Europe *perestroika* has unleashed winds of change that now blow, both east and west, with gale force. In the Orient, and Latin America, and even now in Africa, the passion for democracy is bursting the bondage of Marxist and authoritarian regimes. China's doddering Communist warlords struggle vainly against time and tide to suppress the flood of liberty that sprang forth in Tiananmen Square one year ago. Japan's worn-out political establishment remains untoppled, but continues to teeter as that fast-aging society reassesses all its basic assumptions and plots its next great leap. India's establishment has fallen, unleashing new upheaval in the world's greatest democracy.

From Czechoslovakia to Chile, from South Africa to Nicaragua, from Mongolia to Ethiopia, the status quo is on the rout, the unthinkable has become the commonplace, and the fabric of whole societies is being rewoven. As every major social structure in these lands is reappraised and redesigned or replaced, the most conservative social glue--education--inevitably will be reinvented as well.

The irony of America's predicament is dire: To keep pace with the breakneck dynamism of the rest of the world, the United States urgently needs to reconstruct its entire national learning enterprise. Yet the relative moderation of structural upheaval in other American institutions breeds a complacency that makes it only more difficult to truly "restructure" an academic establishment that stands as a daunting barrier to national progress and global competitiveness. The acute threat to America now is that it may not experience the goad of another "Pearl Harbor" crisis, but only the steady, incremental degeneration of social senility. Whatever may be the solution to this dilemma, further feeding the academic lobby's insatiable fiscal appetite would only be a giant leap backward.

The need for leadership. EPI's call for more spending on education is a kind of educational Campeauism–a strategy for wealth through insolvency. But the wide acceptance and repetition of EPI's faulty analysis is a symptom of a gap in national leadership for which EPI cannot be blamed.

By leaving out reduced cost and greater productivity from the list of national education goals the president and the governors recently espoused, the Bush administration and the state executives left themselves wide open to the kind of counterattack the EPI paper has fueled. While the administration has correctly tried to refocus the education reform debate on "results, not resources," its lack of a compelling strategy to achieve more learning at less cost--which America actually has the technology to attain--has left the academic lobby's siren call for more spending unchallenged and unscathed.

What would such a strategy look like? Certainly a comprehensive plan for restructuring a $500 billion industry will be sophisticated and complex. But there are some important **strategic** goals the president and governors--as well as business leaders and other policymakers--should consider adding to complement the academic goals they already have agreed to:

- **The United States should double the productivity of its investments in education and training by 2001.**

Obviously, there will be some illuminating debate about what "doubling productivity" means–appropriate measures of outcomes will be needed as well as more accurate accounting for costs. But commitment to this goal will focus attention where it belongs--on increasing results while freezing or reducing costs--and will provide a firm counter to the academic lobby's endless demands for more money.

- **American education and training institutions should commit a minimum of 1% of their gross budgets to investment in research, development, and technological innovation.**

This would be an increase of 10 to 40 times over the current level of educational R&D investment, and would still leave the education industry spending only half as much on R&D as the average U.S. business. But 1% would not break any educational institution's budget and would offer some hope to taxpayers and tuition-payers that academia's soaring cost spiral might be reversed.[37]

- **Guarantee that, before 2001, all American learners will have at least two choices for the education or training services they need.**

More broadly, we need to maximize the degree of choice and flexibility available not only to students but equally to teachers, administrators, and vendors of educational products and services. Increased choice and competition are essential to give educational enterprises incentive to become more innovative and productive. The top-priority objective in pursuing this goal is to assure that every one of the nation's more than 15,000 school districts offer all students and families choices, at least among public schools, while simultaneously giving teachers and principals the freedom to manage their own schools.

- **Reconstruct the nation's testing enterprise, by 2001, to provide and apply accu-**

rate assessments of individual abilities, including workforce-relevant knowledge and skill, not just academic achievement.

An initial step in this direction, suggested by Al Shanker, president of the American Federation of Teachers, is to abolish existing standardized tests. Beyond that, Shanker rightly urges development of a new, more sophisticated testing technology that will provide meaningful accounting, and hence incentive, for actual student learning, not just class attendance. A new U.S. Labor Secretary's Commission on Achieving Necessary Skills (SCANS) is about to spend the next year working to develop detailed guidelines that should provide a useful platform for pursuing this goal. Clearly, more precise and efficient testing processes will be essential to creating a more productive national learning enterprise.

- **Assure every student in America access to a "distance learning" network by 2001.**

We have a set of communication technologies in place--telephone, CATV, satellites, fax, etc.--that can provide some kind of learning-at-a-distance to nearly everyone now. The strategic version of this modest-sounding goal really is to develop a national, integrated, "telematic" learning environment that can allow anyone to learn anything, anywhere, anytime. Fully realizing the potential of distance learning will require a broadband network, ultimately digital, which will give everyone in America multi-media access to any form of instruction or knowledge available to anyone else. One telephone company scientist has labelled this ultimate technology "telesophy." Its full achievement will require completion of the national, digital, fiber-optic communications network that, besides being the true "school of the future," will be the essential "spinal cord" of the information-age economy.[38]

Clearly this kind of high-technology, market-oriented strategy for restructuring the American learning enterprise will require major investments. But these will be true **investments**--ultimately paying off in more, better, faster, and cheaper learning--rather than simply bigger **expenditures** on more of the same old unproductive schooling. And financing these investments does not require increased total spending on education or training. Rather, restructuring can and should be paid for by reallocating some of the vast resources now spent in the education industry from inefficient activities to more productive applications, while taking full advantage of the investments in new technologies that are transforming every other sector of the nation's economy.

Conclusion. While conceding that spending more money on K-12 schooling is "not the only answer" to America's education problems, EPI's Rasell and Mishel still conclude that "to begin a process of education reform by denying the need to increase spending ...places a severely limiting constraint on any plans for education." The real strategic situation is precisely the opposite:

Past education reform processes in the United States continually began by assuming a need to increase spending and have failed to produce any consistent result other than greater cost and lower productivity. A long history of futile reform movements[39] proves that perpetuating this error is what would impose a lethal constraint on any plan or hope for education improvement in the United States.

There is no need for the United States to increase spending on education--there is an urgent need for academic institutions to restructure their vast resources to become both more effective and more efficient.

The United States does not lag behind other nations in spending on education--but America would be better off if it did spend less on education as a result of creating a far more productive learning enterprise.

NOTES

1 A technical assessment by U.S. Education Department staff, entitled *Shortchanging Education: A Case Study in Flawed Economics,* was published on the same day as the EPI paper, and effectively reveals several of the most glaring errors of the EPI analysis. A Policy Analysis (No. 126) by John Hood, *Education: Is America Spending Too Much?,* published by the Cato Institute in Washington a day later (18 January 1990), provides an effective counter to the EPI argument for more U.S. education spending. Although Hood's Cato report does not explicitly critique the EPI paper, Hood does expressly contradict Rasell and Mishel in a brief column in *The Wall Street Journal,* "Education: Money Isn't Everything" (9 February 1990). In this briefing paper, I both summarize and expand on the analysis provided by these earlier publications.

2 U.S. Education Dept., "Technical Assessment."

3 This is a flaw that is common to most international comparative studies. If the United States of America were compared to the (to-be) United States of Europe, the education systems of many American states would equal or exceed those of many European "states," in terms of both spending and achievement. Reporting that a continental country with the geographic and social diversity of the U.S.A. "lags" behind a micronation like Switzerland or Sweden makes as little sense as saying that Texas trails Beverly Hills.

4 EPI news release, 16 January 1990.

5 Patricia Summerside, "The Things Money Can't Buy," *Policy Review,* Winter 1990.

6 Attributed to Rasell by EPI News Release.

7 See Drucker, *The New Realities* (New York: Harper & Row, 1989).

8 Also attributed to Rasell by EPI's News Release.

9 See Denis Doyle and Bruce Cooper, *Federal Aid to the Disadvantaged: What Future for Chapter I?* (London: Falmer Press, 1988).

10 Stanley Pogrow, "Challenging At-Risk Students: Findings from the HOTS Program," *Phi Delta Kappan,* January 1990.

11 From Hood (1990).

12 "Districts with higher revenue per pupil provide a somewhat costlier instructional program, but they devote much larger shares of their budget to non-instructional purposes." S.J. Carroll, "Search for Equity," in W.W. McMahon and T.G. Geske, eds., *Financing Education: Overcoming Inefficiency and Inequity* (Urbana, IL: University of Illinois Press, 1982); cited by Hood (1990).

13 See Table 7 of the EPI Briefing Paper.

14 See William Johnston and Arnold Packer, *Workforce 2000: Work and Workers for the 21st Century* (Indianapolis: Hudson Institute, 1987).

15 Eric A. Hanushek, "The Impact of Differential Expenditures on School Performance," *Educational Researcher,* May 1989.

16 Deborah Inman, *The Fiscal Impact of Educational Reform* (New York: Center for Educational Finance, New York University, May 1987).

17 State and local governments--which provide most public funding for education--are not immune to the deficit crisis. Local constitutional proscriptions have not prevented some state governments from sliding into debt or even insolvency. Federal, state, and local taxes all are taken from the same taxpayers' wallet; when taxes are increased at one level, they tend to reduce the tax sources available to the others. If federal borrowing forces up interest rates, debt costs increase for other borrowers, public or private, as well.

18 The sources of these data and further discussion of the "technology gap" can be found in an earlier Hudson Institute Briefing Paper (No. 111, 8 November 1989), "Closing Education's Technology Gap." Also see Lewis J. Perelman, "Schools: America's $500-billion Flop," *The Washington Post,* 3 December 1989.

19 U.S. Bureau of the Census, *Statistical Abstract of the United States: 1988* (Washington: 1987); p. 142.

20 "C Stands for Company, Turned Into Classroom," *The Wall Street Journal,* 1 March 1990.

21 From Julian L. Simon, *The Economic Consequences of Immigration* (New York: Basil Blackwell, 1989).

22 Even when adults needing basic education are served by public schools, they are often charged tuition and/or their costs are charged against programs or categories different from the normal K-12 budget.

23 Note that this is just one of many no-cost or low-cost ways of increasing the productivity of education expenditures.

24 Anthony P. Carnevale and Harold Goldstein, *Employee Training: Its Changing Role and An Analysis of New Data* (Washington: ASTD Press, 1983).

25 Anthony P. Carnevale and Janet W. Johnston, *Training America: Strategies for the Nation* (Alexandria, VA: American Society for Training and Development, 1989).

26 Anthony P. Carnevale, Leila J. Gainer, and Ann S. Meltzer, *Workplace Basics: The Skills Employers Want* (Washington: U.S. Dept. of Labor, 1989).

27 Lauren Resnick, *Education and Learning to Think* (Washington: National Academy Press, 1987). Also see Sue E. Berryman, "Breaking Out of the Circle: Rethinking Our Assumptions about Education and the Economy," Occasional Paper No. 2. (New York: National Center for Education and Employment, Columbia University, July 1987).

28 For instance, see Richard B. Freeman, *The Market for College-Trained Manpower: A Study in the Economics of Career Choice* (Cambridge, MA: Harvard University Press, 1971).

29 Cf. Johnston and Packer (1987).

30 Unfortunately, reports and studies of job "requirements" often do not distinguish between the educational qualifications employers ask for in their job requisitions or ads and the specific knowledge and skills needed to perform the work. In practice, employers commonly ask for more academic credentials than are needed, in an attempt to reduce the number of underqualified applicants. But the workforce shortages of the 1990s and beyond--combined with the hollowing out of diplomas--are making this practice ever less feasible. A graphic example of the problem: The U.S. Navy's training director was quoted in a recent news report as saying, "I have college graduates in [nuclear submarine] school who can't read."

31 Michael Porter, "Why Nations Triumph," *Fortune,* 12 March 1990.

32 "Where the Schools Aren't Doing Their Homework," *Business Week,* 28 November 1988.

33 Richard R. Verdugo and Naomi Turner Verdugo, "The Impact of Surplus Schooling on Earnings," *The Journal of Human Resources,* Fall 1989.

34 Nathan Keyfitz, "Putting Trained Labour Power to Work: The Dilemma of Education and Employment," *Bulletin of Indonesian Economic Studies,* December 1989.

35 The French term "telematique" usefully represents the fusion of the technologies of telecommunication and computing.

36 James Fallows, *More Like Us: An American Plan for American Recovery* (New York: Houghton-Mifflin, 1989).

37 A detailed plan for how to implement this proposal is contained in Hudson Institute's Briefing Paper No. 111, "Closing Education's Technology Gap."

38 See G.A. Keyworth II and Bruce Abell, *Competitiveness & Telecommunications* (Indianapolis: Hudson Institute, 1990).

39 See, for instance, Carl F. Kaestle, "The Public Schools and the Public Mood," *American Heritage,* February 1990. For a more extensive review of post-War education reform, see Diane Ravitch, *The Troubled Crusade: American Education 1945-1980* (New York: Basic Books, 1983).

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